

## **Relations Among Anxiety, Depression, and Dissociative Symptoms: The Influence of Abuse Subtype**

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The purpose of this study was to explore relations and mediating factors among dissociation, depression, and state-trait anxiety for individuals who experienced physical abuse, sexual abuse, both physical and sexual abuse, or no abuse. In all, 549 Turkish undergraduate university students participated in the study and completed the Dissociative Experiences Scale, the Beck Depression Inventory, the State-Trait Anxiety Inventory, and a demographic measure. Both physical abuse and sexual abuse were associated with elevated levels of dissociative symptoms and with pathological dissociation. Results demonstrated that patterns of relations between anxiety, depression, and the forms of dissociation differed significantly among the participants who reported sexual abuse as compared with the other groups. Results suggest that dissociative symptomatology may differ in its relation to depression and anxiety according to abuse subtype.

**KEYWORDS** dissociation, anxiety, depression, sexual abuse, physical abuse

## INTRODUCTION

*Dissociation* is defined as a disruption in the functions of consciousness, memory, identity, and perceptions of one's environment, functions that are usually integrated (American Psychiatric Association, 1994). Dissociative experiences exist along a spectrum, ranging from fantasy-proneness and daydreaming to problematic disintegration of thoughts, feelings, and actions, and they may be conceptualized using continuum or taxon models (Putnam, 1997). Published surveys have shown that dissociative symptoms are common in the general population of North America and Europe (Ray, 1996; Ross, Joshi, & Currie, 1990) and in other cultures (Martinez-Taboas & Bernal, 2000; Xiao et al., 2006). Symptoms of dissociative disorders in Turkey appear to be consistent with those found in other cultures, and diagnoses of dissociative disorders are not rare in the country's general population (Akyüz, Dogan, Sar, Yargıç, & Tutkun, 1999; Sar, Yargıç, & Tutkun, 1996).

Several models address variations in types of dissociative symptoms, the severity of dissociative experiences, and the connection between trauma and dissociation. Data provide strong evidence for the role of trauma in elevated levels of dissociative symptoms in the general population (van der Kolk, 2003). Both childhood physical abuse and sexual abuse have been demonstrated to be closely related to dissociation (Chu & Dill, 1990; Kirby, Chu, & Dill, 1993). Patterns of abuse such as greater severity and duration, younger age of onset, and the presence of more than one type of abuse lead to poorer psychological outcomes (Beitchman et al., 1992; Trickett, Noll, Reiffman, & Putnam, 2001). Other characteristics of abuse that impact psychological outcomes include the relationship between the perpetrator and the victim (e.g., Freyd, 1996) and the chronicity of the abuse (e.g., Herman, 1992).

Different phenomena are considered to exist within dissociative experiences, wherein absorption, derealization/depersonalization, and amnesia constitute dimensions of dissociative experiences (Carlson & Putnam, 1993). Waller, Putnam, and Carlson (1996) advocated using a taxonomic distinction rather than a continuum between two types of dissociation. Barlow and Freyd (in press) suggest viewing dissociation as a group of characteristics that can be categorized in two related branches. Branch A includes common dissociative experiences that are not related to trauma, such as absorption and fantasy-proneness. Branch B symptoms have a traumatic etiology and include depersonalization and identity confusion.

Individuals with elevated levels of dissociation typically have additional psychological symptoms. Studies have documented important relations among dissociation, depression, and anxiety in the general population (Levin & Spei, 2003; Maaranen, Tanskanen, Haatainen, et al., 2005; Maaranen, Tanskanen, Honkalampi, et al., 2005). Systematic clinical surveys among psychiatric patients have consistently demonstrated that those suffering from psychological disorders have substantial levels of dissociation (Putnam et al., 1996; Saxe et al., 1993). Clinical studies that incorporate structured clinical interviews have shown that patients diagnosed with dissociative disorders have extremely high rates of depressive symptoms ranging from 88% to 93% (Coons, Bowman, Kluft, & Milstein, 1991; Coons, Bowman, & Milstein, 1988; Martinez-Taboas, 1991; Ross et al., 1990; Tutkun et al., 1998). Approximately half of patients with dissociative disorders have anxiety disorders as well (Ross, Norton, & Wozney, 1989; Sar, Akyüz, Kundakci, Kiziltan, & Dogan, 2004). Studies have suggested that participants who report sexual abuse alone or physical abuse alone have similar psychiatric outcomes (Davis, Petretic-Jackson, & Ting, 2001; Naar-King, Silvern, Ryan, & Sebring, 2002; Wind & Silvern, 1992). However, these studies consistently indicate that combined sexual and physical abuse predicts poorer psychological outcomes as compared to one type of abuse alone or no abuse. In the aforementioned clinical studies, patients suffering from dissociative disorders reported significant rates of sexual and physical abuse, a finding consistently compatible with other research (e.g., Tezcan et al., 2003; van der Hart, Bolt, & van der Kolk, 2005).

There has been limited research on child abuse in Turkey. In a sample of 5,000 Turkish children, Bilir, Ari, and Donmez (1986) reported that 36% of children under 5 years old had been physically abused at some point in their lives. Perpetrators of abuse are often parents and other caregivers (Miller, Fox, & Garcia-Beckwith, 1999). In Turkey, abusive disciplinary practices are not rare in childrearing, and physical discipline is accepted as a normal parenting style in most Turkish families (Orhon, Ulukol, Bingoler, & Gulnar, 2006). Interpersonal relations, values, and childrearing practices among families vary according to socioeconomic status and in urban versus rural regions (Kagitcibasi, 1996). One facet of sociocultural complexity involves the size of individuals' communities (Chick, 1997). Sociocultural complexity may moderate dissociation in two ways: First, differences in sociocultural complexity may influence the probability of detecting abuse and the potential to assuage negative outcomes; and second, cultural environments may instill values that prevent or facilitate different types of abuse. A few studies of nonclinical populations depict rates of sexual abuse that range from 2.5% to 28.1% in different territories of Turkey. Rates of reported abuse are higher in urban regions of the country than in rural regions (Akyüz, Sar, Kugu, & Dogan, 2005; Eskin, Kaynak-Demir, & Demir, 2005; Oral et al., 1996).

Dissociation, depression, and anxiety are the most common emotional outcomes of sexual and physical abuse. However, composite relationships and bidirectional interactions among depression, anxiety, and dissociation have not received sufficient attention, and little is known about how such relations may vary according to abuse subtype. In the present study, associations between dissociation, depression, and state-trait anxiety were evaluated among participants who reported sexual abuse, physical abuse, both sexual and physical abuse, and no abuse. The study aim was to investigate dissociative processes as a response to elevations in levels of depression and state-trait anxiety in these four groups.

## METHOD

### Participants

The participants in this study were 366 male and 183 female undergraduate students whose ages ranged from 17 to 34 ( $M = 22.38$ ,  $SD = 2.34$ ). All participants were volunteers recruited from a university in Eastern Anatolia, one of the least developed regions in Turkey. Students enrolled in this university are, in general, from East Anatolia. The university enrolls approximately 8,000 students.

Researchers announced the study in classrooms. Students were told that investigators were carrying out a psychological survey and that students could contact the departments involved if they wanted to participate. The study was carried out collaboratively between the departments of psychology and educational sciences. Volunteers who contacted the researchers were included in the study. There were no exclusion criteria. After participants were given an adequate explanation of the study's procedures, they provided written informed consent. Approval was obtained from the Institutional Ethics Committee.

Most participants ( $n = 524$ ; 96.1%) were single; 18 (3.3%) were married, and 3 (0.5%) were divorced. Four participants declined to state their marital status. In all, 42 participants (7.7%) reported financial strain, 376 (68.5%) indicated that they were from middle-class backgrounds, and 130 (23.7%) indicated that they were from upper-class families. One participant did not state economic status. Participants' sociocultural complexity (Chick, 1997) backgrounds were measured in this study. Participants were asked to indicate the type of community in which they had primarily resided before age 16. In all, 40 participants (7.3%) had resided in a village, 51 (9.3%) had resided in a town, 321 (58.5%) had resided in a city, and 134 (24.4%) had resided in a metropolis until the age of 16. Three participants declined to respond to this question (Table 1).

**TABLE 1** Descriptive Statistics for Demographic Variables (N = 549)

	Non-abused (N = 320)	Sexual Abuse (N = 50)	Physical Abuse (N = 137)	Sex. & Phy. Abused. (N = 42)	
Age	M=22.31(SD=2.51)	M=22.64(SD=1.82)	M=22.36(SD=2.11)	M=22.76(SD=2.30)	$F(3.542) = 0.684ns$
Gender <sup>‡</sup>					
Female	N=131(71.58%) A	N=16(8.74%)	N=27(14.74%) A	N=9(4.92%)	$LR\chi^2(6) = 23.524 p < .001$
Male	N=189(51.64%) B	N=34(9.29%)	N=110(30.04%) B	N=33(9.02%)	
Marital Status					
Single	N=306(56.15%)	N=49(8.99%)	N=129(23.67%)	N=40(7.34%)	$LR\chi^2(6) = 11.115ns$
Married	N=11(2.02%)	N=1(0.18%)	N=6(1.10%)	N=0(0.00%)	
Divorced	N=1(0.18%)	N=0(0.00%)	N=0(0.00%)	N=2(0.37%)	
Economic Status					
Lower	N=23(4.20%)	N=2(0.37%)	N=10(1.83%)	N=3(0.55%)	$LR\chi^2(6) = 1.311ns$
Middle	N=218(39.78%)	N=2(0.37%)	N=15(2.75%)	N=3(0.55%)	
Upper	N=79(14.42%)	N=35(6.41%)	N=79(14.47%)	N=22(4.03%)	
Cultural Background					
Village	N=25(4.58%)	N=2(0.37%)	N=10(1.83%)	N=3(0.55%)	$LR\chi^2(9) = 6.493ns$
Town	N=31(5.68%)	N=2(0.37%)	N=15(2.75%)	N=3(0.55%)	
City	N=185(33.88%)	N=35(6.41%)	N=79(14.47%)	N=22(4.03%)	
Metropolis	N=78(14.29%)	N=11(2.01%)	N=31(5.68%)	N=14(2.56%)	

<sup>‡</sup>For each group proportions of male and female participants were compared by using two proportions t-tests. Different symbols indicate statistically significant differences ( $p < .05$ ). Compared column proportions are given for gender in Table 1.

## Materials

The instruments used in the study were a demographic questionnaire, the Turkish version of the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), the State-Trait Anxiety Inventory (STAI; Spielberg, Gersuch, & Lushene, 1970), and questions assessing childhood physical and sexual abuse.

**Demographic questionnaire.** A demographic questionnaire was developed by the authors for the current study. The questionnaire included questions regarding age; gender (coded as 0 = female, 1 = male); marital status (coded as 0 = single, 1 = married); economic status (0 = lower, 1 = middle, and 2 = upper); and sociocultural complexity, which refers to the type of community in which participants lived prior to age 16 (0 = village, 1 = town, 2 = city, and 3 = metropolis).

**DES.** This 28-item self-report scale was originally developed by Bernstein and Putnam (1986) and was designed to measure dissociation in both general and psychiatric populations. The DES has adequate temporal reliability, with test-retest correlation coefficients between .79 and .84 (Carlson & Putnam, 1993). The Turkish version of the DES is a reliable and valid measure (Yargic, Tutkun, & Sar, 1995). The Turkish version has an alpha coefficient of .97 and has high test-retest reliability ( $r = .77$ ). The convergent validity of the instrument with the DIS-Q was  $r = .90$  in a Turkish population (Aydemir & Köroğlu, 2000). Participants are asked to respond to items on a scale ranging from 0 to 100. Total DES scores are calculated by averaging the sum of all items.

**BDI.** Beck and his colleagues (1961) developed the BDI as a self-administered inventory to assess levels of depressive symptoms. The BDI consists of 21 items, and each item has a scale of 0 to 3. The Turkish version of the measure was translated by Hisli (1989) and has been shown to be reliable and valid in Turkish populations. Aydemir and Köroğlu (2000) reported a Cronbach's alpha coefficient of .80 and a correlation with the Minnesota Multiphasic Personality Inventory Depression subscale of .50.

**STAI.** The STAI (Spielberg et al., 1970) is a self-administered scale that contains two subscales. Each has 20 items that assess levels of state and trait anxiety. The measure was translated into Turkish by Öner and Le Compte (1985) and has high levels of reported validity (correlations with other anxiety scales ranged from  $r = .58$  to  $r = .84$ ), test-retest reliability (ranged from  $r = .86$  to  $r = .54$  for the subscales), and internal consistency (ranged from  $\alpha = .83$  to  $\alpha = .92$  for the subscales).

**Sexual abuse.** Participants were asked "Before you were 16 years old, were you threatened or forced by anyone to engage in any unwanted sexual activity, or were you sexually assaulted or raped?" Participants who responded affirmatively were classified as sexually abused.

Physical abuse. Participants were asked "Before you were 16 years old, were you exposed to any treatment which left bruises or scars such as beating, kicking, burning, hitting by any object or treated in a way that could be considered physical abuse?" Participants who responded affirmatively were classified as physically abused.

### Procedure

Participants were recruited through classes and volunteered to participate. The aim of the study was explained to participants as responding to questions on a self-administered psychological survey. Participants were assured that their personal information would remain confidential. Participants signed written informed consent forms that explained the procedures that would ensure confidentiality. Participants were then given a packet containing Turkish versions of the measures and were asked to complete the questionnaires in a quiet classroom. Participants were not paid for their participation.

### Data Analysis

Analyses were first conducted to examine demographic differences among groups. Group differences in age were evaluated with analysis of variance. Likelihood chi-square analyses were conducted in order to compare demographic variables among students who were sexually abused, physically abused, both sexually and physically abused, and not abused. Two-proportion *t* tests were used to compare proportions of male and female participants in each group. To assess the role of demographic variables and past history of abuse on psychological variables, the authors used standard multiple regression analyses. Findings were interpreted with standardized regression coefficients. To evaluate composite connections among depression, state-trait anxiety, and the forms of dissociation within the four groups, the authors adopted a multivariate approach. For each group, canonical correlations were calculated to assess relations between the variable set consisting of depression and trait and state anxiety and the variable set of DES subscales.

## RESULTS

### Demographic Characteristics

Table 1 provides results from analysis of variance and likelihood chi-square analyses that demonstrate that demographic characteristics such as age, marital status, socioeconomic status, and sociocultural complexity background did not differ significantly among individuals who reported sexual abuse, physical abuse, both sexual and physical abuse, or no abuse. Chi-square statistics have been conducted in a sample of 549 undergraduates.

### Prevalence of Trauma

In all, 42% ( $n = 229$ ) of the sample reported some form of abuse in childhood or adolescence: 25% ( $n = 137$ ) reported physical abuse, 8% ( $n = 42$ ) reported sexual abuse, and 9% ( $n = 50$ ) reported both physical and sexual abuse. A total of 58% ( $n = 320$ ) reported no physical or sexual abuse. Gender was significantly associated with abuse subtype,  $LR\chi^2(6) = 23.524$ ;  $p < .001$ . Results from two-sample  $t$  tests revealed that the proportional differences between male and female participants who reported sexual abuse and both sexual and physical abuse were not statistically significant. However, men were more likely than women to report abuse (48.36% vs. 21.42%;  $p < .01$ ), especially physical abuse (30.04% vs. 14.74%,  $p < .001$ ). Chi-square analyses revealed that marital status, economic status, and socio-cultural complexity were not associated with past sexual abuse, physical abuse, or combined sexual and physical abuse.

### Effects of Demographic Variables and Reported Child Abuse on Depression, Anxiety, and Dissociation

To assess the effects of demographic variables and types of abuse on psychological variables, the authors performed multiple standard regression analyses. The psychological variables of depression, state-trait anxiety, and forms of dissociation were regressed onto demographic variables and abuse status in two steps. The R-squareds for models were calculated for each multiple regression equation. Table 2 illustrates the coefficients of determination. Step 1 standardized regression coefficients indicated unique effects of each demographic variable, controlling for all other demographic variables. In that step, age, gender, marital status, economic status, and sociocultural complexity were included as independent variables in a standard multiple regression model. Because only three participants were divorced, that response was excluded from analyses that incorporated marital status, so that only differences between single and married students were analyzed. Categorical variables were transformed into dummy variables that should be interpreted as scaled parameters in the model.

As seen in Table 2, standard hierarchical multiple regression models revealed that some demographic variables predicted depression, state-trait anxiety, and types of dissociation. Age was negatively associated with most psychological variables; however, it was positively related to levels of state anxiety, with the latter relation significant at the  $p < .01$  level. Women indicated higher levels of depression and of state and trait anxiety. However, gender was not significantly associated with dissociative symptoms. Marital status was unrelated to the psychological variables investigated in the study. Participants who reported a lower economic status had significantly higher



**TABLE 2** Multiple Regression of Demographic Variables and Reported Abuse on Psychological Variables (N = 549)

Psychological Variables	<i>M</i>	<i>SD</i>	STEP 1					<i>R</i> <sup>2</sup>	<i>F</i> (5, 532)	<i>P</i>
			Age	Gender	Marital Status	Economic Status	Socio-Cultural Complexity			
			<i>b</i>	<i>b</i>	<i>b</i>	<i>b</i>	<i>b</i>			
Depression	13.17	8.22	−0.06	−0.10*	−0.07	−0.09*	−0.04	0.03	3.41	0.01
State Anxiety	43.12	9.15	0.13**	−0.16**	−0.06	−0.12**	−0.09*	0.04	4.81	0.000
Trait Anxiety	44.84	8.74	0.06	−0.18**	−0.08	−0.19**	−0.07	0.04	4.93	0.000
Absorption	31.05	14.50	−0.15**	0.02	−0.04	0.04	−0.03	0.03	3.17	0.01
Amnesia	12.39	10.23	−0.11*	0.06	−0.03	−0.01	−0.05	0.02	1.95	0.09
Depersonalization/Derealization	20.39	16.41	−0.12*	−0.01	−0.05	−0.03	−0.08	0.03	3.25	0.01
DES-Taxon	18.48	13.40	−0.14**	0.03	−0.04	−0.01	−0.07	0.03	3.17	0.01
DES-Absorption	24.24	11.91	−0.13**	0.01	−0.05	0.02	−0.05	0.03	2.66	0.02
DES Total	22.59	11.71	−0.14**	0.02	−0.05	0.01	−0.05	0.03	3.09	0.01

\**p* < 0.05; \*\**p* < 0.01; *b*: standardized regression coefficients.

0 = Female, 1 = Male.

0 = Single, 1 = Married.

0 = Lower, 1 = Middle, 2 = Upper.

0 = Village, 1 = Town, 2 = City, 3 = Metropolis.

**TABLE 2** (*Continued*)

Psychological Variables	STEP 2			$R^2$ Change	$F (8, 529)$	P
	Sexual <i>b</i>	Physical <i>b</i>	Physical & Sexual <i>b</i>			
Depression	0.11*	0.12**	0.11*	0.03	4.01	0.000
State Anxiety	0.03	0.13**	0.15**	0.03	5.23	0.000
Trait Anxiety	0.08	0.12**	0.10*	0.03	4.66	0.000
Absorption	0.10*	0.10*	0.12**	0.02	3.63	0.000
Amnesia	0.12**	0.08	0.08	0.02	2.67	0.01
Depersonalization/Derealization	0.12**	0.14**	0.15**	0.04	4.68	0.000
DES-Taxon	0.10*	0.13**	0.13**	0.03	3.95	0.000
DES-Absorption	0.14**	0.11*	0.12**	0.03	3.97	0.000
DES Total	0.13**	0.12**	0.13**	0.03	4.32	0.000

\* $p < 0.05$ ; \*\* $p < 0.01$ ; *b*: standardized regression coefficients.

levels of depression and state and trait anxiety. Participants' sociocultural complexity was related to state anxiety, with those from less urban backgrounds indicating more symptoms.

The  $F$  values were statistically significant for all regression analyses after physical abuse, sexual abuse, and combined sexual and physical abuse were entered in the model as predictors of psychological variables in Step 2. Step 2 standardized regression coefficients indicated the unique effects of each abuse subtype, controlling for all other demographic variables and other abuse subtypes. Amnesia was not significantly associated with physical abuse. Participants who reported sexual abuse had elevated levels of depressive symptoms and dissociation, whereas state and trait anxiety were not significantly associated with this type of abuse. Experiencing physical abuse or both physical and sexual abuse predicted elevations in symptoms of all psychological variables with the exception of amnesia.

### Relations Among Depression, Anxiety, and Dissociation

Canonical correlation analyses were used for analyzing multivariate relations between variable sets in specific groups. Canonical loadings higher than 0.30 should be interpreted as significantly associated with the variables in the opposed set (Tabachnick & Fidell, 2001). Canonical correlation analyses with standardized scores of variables were conducted to determine multivariate correlations in order to maximize sample canonical variates for both the forms of dissociation and depression-anxiety variables in the four participant groups. Significant results from multivariate analyses in both the nonabused and physically abused groups demonstrated that the variables in the dissociation subscale set were highly correlated with depression and state-trait anxiety ( $p < .001$ ). Canonical correlations between the forms of dissociation and other psychological variables were not significant for the participants who reported sexual abuse ( $p > .05$ ) or both sexual and physical abuse ( $p > .05$ ). Canonical results should be interpreted with caution. As seen in Table 3, multivariate correlations were very close to each other in all groups but were not significant in two groups. The insignificance of these results originated from the small number of participants who reported sexual abuse or both sexual and physical abuse.

## DISCUSSION

The present study evaluated associations between reported child abuse and psychological symptoms in university students and analyzed differences in symptoms according to abuse subtype. The prevalence of physical abuse

**TABLE 3** Canonical Factor Structures for Psychological Symptoms

	<i>Canonical r: 0.46</i> <i>Chi sqr. (9):</i> 82.96; <i>p</i> < .001 Non-abused (N = 320)	<i>Canonical r: 0.48</i> <i>Chi sqr. (9):</i> 14.04; <i>p</i> > .05 Sexual Abuse (N = 50)	<i>Canonical r: 0.54</i> <i>Chi sqr. (9):</i> 48.92; <i>p</i> < .001 Physical Abuse (N = 137)	<i>Canonical r: 0.45</i> <i>Chi sqr. (9):</i> 9.10; <i>p</i> > .05 Sexual & Physical Abuse (N = 42)
Depression	0.96	0.88	0.89	0.71
State Anxiety	0.54	0.07	0.71	0.86
Trait Anxiety	0.79	0.57	0.92	0.97
Absorption	0.91	0.87	0.91	0.85
Amnesia	0.74	0.81	0.68	0.26
Depersonalization/ Derealization	0.92	0.82	0.91	0.83

was somewhat lower than that reported by Bilir et al. (1986), which might reflect differences in the age of participants at the time of assessment. The current study reports rates of sexual abuse similar to the results of two previously unpublished studies that identified rates of sexual abuse of 11% and 15% among high school and college students, respectively (Oral et al., 1996). Physical abuse was more prevalent among men than among women (30.04% vs. 14.74%). There were no significant differences in reports of sexual abuse or reports of combined sexual and physical abuse between genders. This finding contrasts with results from many population surveys that indicate that women report higher rates of sexual abuse than men (e.g., Goldberg & Freyd, 2006; Molnar, Buka, & Kessler, 2001). Alikasifoglu et al. (2006) pointed out that the disclosure of sexual abuse can be dangerous and shameful, which may affect victim reports. Being raised in a less complex sociocultural environment may be associated with higher levels of environmental control and with a motivation to conceal personal difficulties (Menard & Ruback, 2003). Hence, community characteristics of the populations from which the participants came might cause underreporting of sexual abuse, especially for women. The sociocultural complexity of participants was not significantly associated with reported abuse, abuse type, or dissociative symptoms. However, another study (Menard & Ruback, 2003), using a North American sample, reported that rates of child sexual abuse were significantly higher in rural areas than in urban settlements, a finding that differs from the present results.

The average DES total score of the sample was 22.59 (*SD* = 11.71), which was higher than findings of previous studies in normal populations (Akyüz et al., 1999; van IJzendoorn & Schuengel, 1996). The mean DES score was close to the findings of a previous study that used an undergraduate sample in Van, Turkey (Agargun et al., 2003). Proneness to dissociative behavior may be an adaptation that is highly related to cultural characteristics.

Aspects of some cultures may motivate individuals to hide manifestations of distress that could be deemed inappropriate, which could result in covert behavioral expressions of distress such as dissociation.

Physical abuse, sexual abuse, and combined abuse experiences were associated with elevated levels of total dissociation and dissociation subtypes. These findings replicate those of previous studies (Chu & Dill, 1990; Kirby et al., 1993). However, the effects of physical abuse and combined sexual and physical abuse on amnesia were not significant for the sample. Levels of state and trait anxiety were not significantly associated among participants who reported sexual abuse; however, both forms of anxiety were significantly related to reports of physical abuse and to reports of both physical and sexual abuse. Amnesia seems to play a crucial role in the associations between dissociation and psychological symptoms. Dissociative amnesia was significantly related to sexual abuse but not to physical abuse or sexual and physical abuse. This may reflect the fact that reduced memory functions generally result in anxiolytic effects (Bannerman et al., 2004). Anxiety may be converted to or expressed as symptoms of dissociation, particularly amnesia, among sexually abused participants. On the contrary, the finding that forms of dissociation were not correlated with psychological symptoms for participants who reported sexual abuse or both sexual and physical abuse is somewhat unusual and may reflect the limitations of the canonical correlation analyses. Although women reported more symptoms of depression and of state and trait anxiety, subtypes of dissociation were unrelated to gender. Similar findings have been reported in a large community sample in which men and women did not differ in dissociative symptomatology (Spitzer et al., 2003).

Depression and state-trait anxiety were highly correlated with all forms of dissociation in the nonabused and physically abused participant groups. These findings are consistent with data from previous studies that report strong connections among dissociative depersonalization, anxiety, and depression (Lambert, Senior, Fewtrell, Phillips, & David, 2001; Simeon, Riggio-Rosen, Guralnik, Knutelska, & Nelson, 2003). Absorption also appears to be related to anxiety and depression (Levin & Spei, 2003; Wolfradt, 1997; Wolfradt & Meyer, 1998). Because dissociation may be used instrumentally to cope with negative affect (e.g., Butler et al., 1996), such interrelations are expected. Absorption and derealization/depersonalization were the forms of dissociation most closely linked to elevations in depression and anxiety.

The results indicate that relations between symptoms varied according to the type of abuse reported by participants. Among participants who reported sexual abuse or both sexual and physical abuse, subtypes of dissociation were not significantly correlated with the depression or the state-trait anxiety variable set. Among participants who were sexually abused, canonical correlations within sets for depression, trait anxiety,

absorption, amnesia, and derealization/depersonalization were high, whereas state-trait anxiety levels were less related to dissociative symptoms. Participants who reported both physical and sexual abuse had patterns of associations that were similar to those of the group who reported only sexual abuse, except that dissociative amnesia was less related to the counterpart variable set. State and trait anxiety were highly correlated with dissociative symptoms for participants who experienced both physical and sexual abuse.

The current data suggest that individuals who experience childhood sexual abuse may sustain a different trajectory of dissociative symptomatology than victims of physical abuse or persons without histories of abuse. In the current sample, sexual abuse was strongly related to depression and dissociation, but dissociation was less linked to anxiety symptoms in survivors of sexual abuse than in those who experienced physical abuse or no abuse. Amnesia was not connected to depression and state-trait anxiety symptoms for participants who reported both sexual abuse and physical abuse. Psychologists have noted that interpersonal traumas such as abuse comprise overwhelming experiences (e.g., Schore, 2003). Whereas physical abuse, though damaging, may be interpreted as culturally normative, sexual abuse is a clearer violation of the roles and responsibilities adults have toward children. Prior research indicates that sexual abuse may be more related to shame than other forms of abuse, and such an association is likely to reflect a deep and subconscious process of emotional coping. This finding, together with the few prior studies on differences in emotional responses according to abuse subtype, provides a starting point for future research in this area. Every victim of abuse is impacted by the specific circumstances of the abuse, unique intrapersonal characteristics, and the quality of the posttraumatic environment. However, the current study adds to others that suggest that different forms of abuse may produce somewhat predictable reactions. Understanding the cognitive and emotional styles of people who have different abuse experiences is an important part of psychotherapy with victims of abuse and can inform future theoretical, clinical, and research endeavors.

The present study has several limitations. Participants were fairly homogenous with respect to age, and all were university students who self-selected as participants in the study. Participants included approximately twice as many men as women, which may have impacted the results. The study only used two questions to ascertain abuse experiences, and these questions were not part of a published measure. The study did not gather information regarding the severity, duration, or age of onset of abuse. In addition, the specific language used to query for abuse may have influenced responses (e.g., Wyatt & Peters, 1986). Associations among abuse subtypes and psychological symptoms were only evaluated for sexual and physical abuse. Research indicates, however, that

emotional abuse may be more strongly related to negative outcomes than other forms of abuse (e.g., Kent, Waller, & Dagnan, 1999; Teicher, Samson, Polcari, & McGreenery, 2006). Therefore, future research that compares abuse subtypes should include assessment of emotional abuse.

Like most studies of interpersonal trauma, the present study is also limited by its use of retrospective self-reports to assess childhood abuse. Associations among trauma, memory, and symptoms pose challenges for the interpretation of cross-sectional research. The sample included relatively few people who reported sexual abuse or both sexual and physical abuse. Because abuse is often not reported or underreported (e.g., Wyatt & Peters, 1986), the sample may have contained participants who were abused but who did not disclose abuse. In addition, the procedure assessed sexual abuse prior to age 16. Rates might have been higher had abuse experiences after age 16 been queried. Finally, the research data were collected using self-administered instruments. It is possible that a face-to-face interview procedure might have provided participants with more comfort for disclosing abuse.

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